Classical and Quantum Gravity 2001 vol.18 N11, pages 2217-2232

Cherenkov radiation in a gravitational-wave background

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Abstract

A covariant criterion for the emission of Cherenkov radiation in the field of a nonlinear gravitational wave is considered within the framework of exact integrable models of particle dynamics and electromagnetic wave propagation. It is shown that a vacuum interacting with curvature can give rise to Cherenkov radiation. The conically shaped spatial distribution of radiation is derived and its basic properties are discussed.

http://dx.doi.org/10.1088/0264-9381/18/11/315